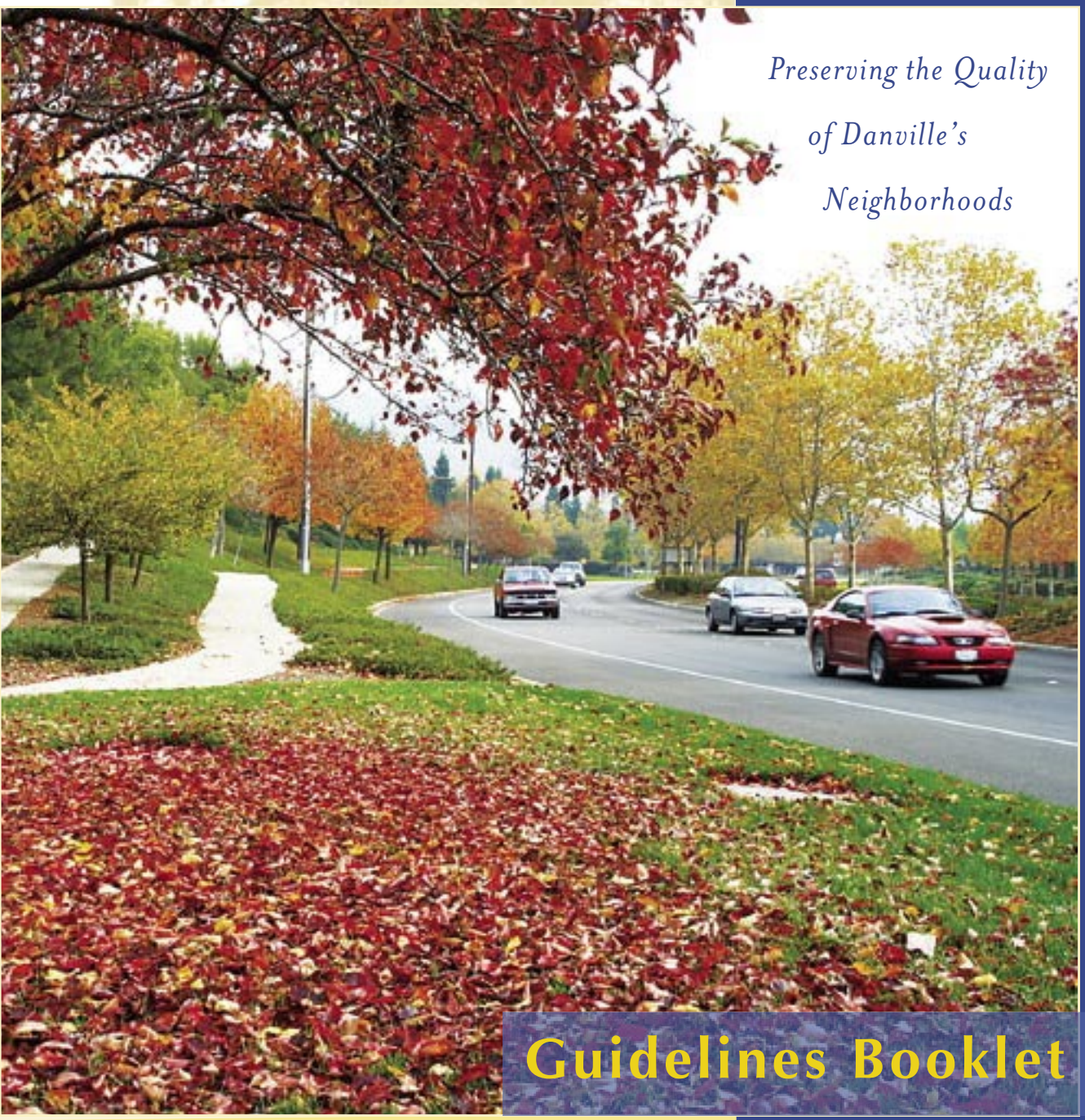
NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

Town of Danville



Preserving the Quality of Danville's Neighborhoods

Guidelines Booklet

TABLE OF CONTENTS

INTRODUCTION

As traffic congestion increases on the freeway and major arterials, more traffic will shift to neighborhood streets.

INTRODUCTION

Many of us live overscheduled and fast-paced lives. The hectic pace of modern living, along with the ability of modern technology to insulate us from the external world, result in our tendency to negotiate local roadways with greater ease and at higher speeds. The noticeable increase in vehicular speeds, in conjunction with an overall growth in traffic volume throughout the region, has resulted in a recurring concern by residents that more vehicles are traveling faster through neighborhood streets. Residents feel that the ever-growing number of speeding vehicles threatens the safety, peace and character of their neighborhoods. Providing an efficient multi-modal transportation system, while maintaining the safety of Danville's streets is a constant challenge.

Neighborhood Traffic Management

The Danville Town Council adopted the Neighborhood Traffic Management Program (NTMP) in 1996 to address age-old neighborhood traffic issues using an innovative and community-based approach. The Danville NTMP was the first "traffic calming" program of its kind in Contra Costa County, and represents the Town Council's commitment to the safety and livability of its neighborhoods. The program's goal is to restore and maintain a balance between mobility and neighborhood quality of life. In the process, we also hope to make safety and appropriate driving behavior a higher priority for all users of Danville's roadways.

The program has been effective in reducing traffic concerns on local streets throughout Danville. Since its inception, periodic changes to the initial program have been adopted by the Town Council. These changes streamline the process and allow the program to keep pace with modern traffic engineering technologies by incorporating new traffic calming techniques.

This update of the NTMP Guidelines Booklet reflects the policy and procedural changes to the NTMP which have been adopted since its inception. Additionally, this update incorporates new tools that have been added to the "traffic calming toolbox" to help address on-going concerns while other tools have been de-emphasized.

Purpose of Traffic Calming

Traffic calming began in Europe around 1970 and has grown from a non-traditional approach to a widely adopted method of reducing traffic problems on residential streets. In Danville, traffic calming is the art and science of managing inappropriate vehicular speeds and volumes through educational, enforcement and/or engineering measures so that their negative impacts on residents, pedestrians, bicyclists and schools are minimized.

Goals of the NTMP

Through implementation of the NTMP, the Town of Danville seeks to achieve the following goals:

Neighborhood Livability:

This goal strives to provide opportunities for neighbors to socially interact without traffic distractions or threats, establish a sense of neighborhood identity, and balance the multiple uses of a public roadway and the needs of a neighborhood.

Citizen Participation and Education:

This goal strives to provide an educational forum where residents can be actively involved in evaluating the advantages and disadvantages of traffic management efforts. Through the NTMP process, residents can obtain an understanding of traffic calming and traffic safety techniques available in the program.

Implementing the Goals and Policies of the General Plan:

The NTMP also serves to implement some of the goals and policies of the 2010 Danville General Plan:

Goal 1: Assure that future development complements Danville's existing small town character and established quality of life.

Policy 1.08 Protect existing residential areas from intrusion of incompatible land uses and disruptive traffic to the extent reasonably possible.

Goal 12: Provide for safe and efficient vehicular movement on Town of Danville streets.

Policy 12.01 Maintain roadways and traffic control devices in safe and effective operating condition.

Policy 12.06 Consider implementation of technologically advanced tools to enforce traffic regulations and monitor traffic conditions.

Goal 14: Minimize the intrusion of through traffic on residential streets.

Policy 14.01 Implement neighborhood traffic management measures, including physical changes and traffic control devices, which increase neighborhood livability and street ambiance, discourage through traffic on residential streets, discourage speeding, and ensure vehicle, pedestrian, and bicycle safety.

Balancing the E's: Education, Enforcement and Engineering

Education, enforcement and engineering – the "3 E's" – are commonly accepted elements needed for the successful implementation of a traffic calming program. The experience of other similar programs has shown that use of only one of these E's, without the other two, often generates a less than satisfactory result. The Danville NTMP process takes an approach which incorporates all three elements.

- **Education:** Residents will be provided with information and tools through a variety of outlets to make informed decisions about neighborhood traffic concerns and influence driving behavior. Educational aspects of the NTMP will include a neighborhood educational forum as well as educational marketing materials developed through partnering programs such as the Street Smarts traffic safety education program.
- **Enforcement:** Some strategies can be put into effect through targeted police enforcement to increase community awareness of speeding problems. The police department is committed to utilizing its available resources to respond to areas experiencing traffic problems as identified by collision analysis, resident concerns, and conditions observed by enforcement officers.
- **Engineering:** Traffic calming strategies involving physical features can be developed using a combination of sound engineering principles, community input, and financial constraints. The implementation of a physical device is subject to the review and approval of the Town Council.

It is important for neighborhoods participating in the NTMP to recognize that traffic concerns stem from a variety of sources and that the most appropriate solution may not be an engineering one (e.g., the installation of speed humps). Elements of the other "E's," such as education and enforcement, are equally valuable and are viable traffic calming measures that can be implemented in a neighborhood.

Partnering Programs

Recognizing that automobile traffic poses one of the greatest threats to the community's quality of life, the Danville Town Council has expanded the traffic management concept town-wide. Today, the NTMP is one component of a multi-pronged approach used to minimize traffic congestion and traffic safety issues throughout Danville.

Town-wide Traffic Management Program

Public Education Programs

- "Street Smarts"
- "Safe Routes to School"
- Higher visibility police vehicles
- And others

Arterial Traffic Management

- Red light violation signage
- Electronic radar speed display signage
- Police vehicle deployment

Neighborhood Traffic Management

- A program using education and traffic calming tools
- Community speed watch program

Interagency Coordination and Input

- Collaboration among the local cities, school district, and the community to address school related traffic issues

Elements of other community-wide traffic management programs, such as the Street Smarts traffic safety education program, will be incorporated into the NTMP as appropriate.

IMPLEMENTATION PROCESS

IMPLEMENTATION PROCESS

The Danville NTMP involves a two-part implementation process. The first is a series of preliminary actions, designed to determine the nature, extent and severity of the traffic concern. The second part incorporates neighborhood input and the identification of the appropriate traffic management tools to address neighborhood concerns.

Part I: Preliminary Actions

This phase of the process involves understanding the specific neighborhood concerns, making field observations, and determining what actions are appropriate to address these concerns.

1. Contact us with your concern

Some concerns, which are generally related to either safety or maintenance (e.g., sight distance problem requiring tree trimming or the replacement of missing signs, etc.) can be addressed immediately. Other concerns are more appropriately handled through the NTMP process. If this is the case, the Transportation staff would encourage the concerned resident to initiate the next stage of the NTMP process.

2. Submit a NTMP Application Request

This form will document the traffic concern, identify a potential neighborhood coordinator, and requires an indication of support from the neighborhood to participate in the NTMP process. The specific requirements are detailed on the application form, which is available at the Town Offices or on the web site

at www.ci.danville.ca.us (available in either the "Town Services" or "Transportation Services" section).

3. Data Collection and Analysis

Upon receipt of the application, traffic data will be collected from the neighborhood (including volume, speed and accident information) to determine the nature and severity of the concern. Based on this empirical data, the Transportation staff will determine whether the traffic safety condition warrants continuation with the NTMP process.

A neighborhood that continues on with the NTMP process will have an opportunity to review the results of the traffic data and discuss the traffic management tools available to address their concerns at a kick-off meeting.

Part II: Neighborhood Involvement and Implementation

This second step will extensively involve the residents of the affected neighborhood in the process of:

1. Characterizing the Traffic Problem

This involves accurately characterizing the cause of the traffic concern within the neighborhood. It is also important to determine whether the primary concern is one of vehicle safety, pedestrian/bicycle safety, congestion, noise, inconvenience or something else entirely. Proper identification of the problem will allow the Town to help the neighborhood select the appropriate traffic management measures to address the core issue. Appendix A contains a general set of guidelines used in assessing a traffic problem.

2. Setting Goals and Objectives

Before selecting the traffic management measures, the neighborhood should have a clear idea of a reasonable desired outcome, which can be used as a rough yardstick for success. It is important to be pragmatic during the development of these goals as it may not be feasible, for example, to reduce the traffic volume of a major neighborhood collector street or to eliminate peak hour congestion from a street located adjacent to a school. In these instances, an attainable goal may be a targeted reduction in the prevailing speeds on the neighborhood collector street or a more expeditious movement of vehicles along the street that fronts the school.

3. Selecting the Tools

There are a number of neighborhood traffic management tools available. A detailed description of each is contained in Appendix B which is organized into three general categories:

Category 1: Educational, Awareness, and Enforcement Measures

These measures are the first steps in addressing traffic safety concerns within Danville neighborhoods. These measures could include increasing police enforcement, educating the residents through the use of Town sponsored programs (e.g., Street Smarts Program), distributing traffic safety literature, or displaying traffic safety

signage throughout the neighborhood. These measures are community-driven and allow residents to take immediate action to address concerns by educating themselves and their neighbors about driving behaviors and ways to calm traffic. There are neighborhoods where only Category 1 measures are appropriate.

Category 2: Traffic Control Devices

These traffic management measures are used to send a specific regulatory, warning, or guiding message to motorists, cyclists and pedestrians. In residential areas, some common examples are stop signs, speed limit signs, and pavement markings. There are neighborhoods where a combination of measures from only the first two categories (i.e., Category 1 and 2) are appropriate.

The installation of this category of traffic management tools is subject to the review of the Transportation staff to ensure compliance with applicable state and federal regulations. Additionally, certain tools such as stop signs require the approval of the Danville Town Council.

Category 3: Traffic Calming Devices

These traffic management measures involve the installation of physical features on the roadway that guide or restrict the movement of vehicles, cyclists or pedestrians. These devices (e.g., speed humps) typically alter the configuration, and potentially the visual and functional character, of neighborhood streets. Because of their potential impacts, they require detailed engineering, are expensive, and require substantial community input. The following requirements apply to this category of traffic management measures:

a. Education: As a prerequisite step to pursuing the implementation of Category 3 traffic calming measures, a neighborhood will be required to participate in a Town-sponsored traffic calming educational seminar. Guided by the Transportation staff, the seminar is a forum to provide the factual information necessary for residents to make informed decisions regarding traffic concerns in their neighborhood. Neighborhood representatives are required to attend.

During the seminar, residents would learn about the attributes of traffic calming devices, their purpose, their

effectiveness, and their advantages and disadvantages. No decisions pertaining to the application of traffic calming devices for a neighborhood would be made at the seminar. Upon completion of the seminar, participating residents would be asked to share and distribute the educational information to their neighborhood.

b. Public Notification: All potentially affected residents within the neighborhood will be notified of all neighborhood meetings.

c. Engineering: All traffic calming devices will be designed and located in a manner consistent with sound engineering principles. Some devices are not appropriate within certain neighborhoods. Appendix C contains a summary of some of the engineering factors that must be taken into consideration.

d. Neighborhood Petition: The installation of traffic calming measures require substantial neighborhood support, which is obtained through a petition process:

- *A neighborhood petition, which describes and identifies the location of the proposed traffic calming measure, must be circulated by the proponents to the affected neighborhood residents for signature.*
- *The petition must be signed by seventy percent (70%) of residents along the primary street(s), and fifty percent (50%) of residents along adjacent streets or cul-de-sacs, within the neighborhood.*
- *Each residential address is entitled to one signature.*

The neighborhood petition boundary, the primary street(s), as well as the secondary street(s), will be identified and illustrated on a map prepared by the Transportation Services Division. The boundaries are typically defined based on a number of factors including the physical layout of the neighborhood, prevailing travel patterns, and the number of access points within a neighborhood. Some neighborhoods qualify for a special circumstance boundary definition (Appendix D).

e. Fire District Review: Policy 21.04 of the Danville 2010 General Plan seeks to "maintain a response time of less than five minutes for emergency fire calls to be met a minimum of 90 percent of the time ..." The San Ramon Valley Fire Protection District ("Fire District") will be consulted throughout the NTMP process to ensure that traffic calming devices selected by the neighborhood do not significantly diminish the Fire District's ability to achieve this policy.

f. Town Council Approval: All traffic calming measures are subject to the review and approval of the Danville Town Council at a public meeting.

A graphic summary of a simplified NTMP process is provided on the following pages. A tabular summary of the traffic management tools, and their level of effectiveness for various traffic concerns, is contained in Appendix E.

Often, there is a high demand for the NTMP program throughout the Town. The Transportation staff will consider a number of factors (Appendix F) when ranking the priority of project areas within the Town.

IMPLEMENTATION PROCESS

Part 1 – Preliminary Actions

Residents voice neighborhood traffic concerns

Neighborhood submits NTMP application

Town collects traffic data

Traffic data is analyzed. Does neighborhood qualify for the program?

Yes

No

Notify neighborhood or resident

Part 2 – Neighborhood Involvement and Implementation

Education, Awareness and Enforcement

Increase enforcement and education measures in neighborhood

Host traffic education forum

Distribute educational materials to neighborhood

Residents perception of progress and effectiveness

Yes

PROBLEM ADDRESSED

No

IMPLEMENTATION PROCESS

Part 2 cont. – Neighborhood Involvement and Implementation

Neighborhood meeting(s)

Input received is evaluated.
Plan of action is determined.

Category 1 Measures
Education and enforcement

Category 2 Measures
Traffic control devices

Category 3 Measures
Traffic calming devices

Neighborhood petition process

Staff evaluates completed petition. Minimum approval obtained?

Yes

No

Traffic calming proposal presented to Town Council for approval

Reconvene with neighborhood to discuss further actions

Implement traffic calming measure

Monitor effectiveness

PROBLEM ADDRESSED

appendices

appendix A

GUIDELINES USED TO EVALUATE TRAFFIC PROBLEMS

To implement an effective strategy of properly managing traffic in residential areas, it is important to identify criteria which can be used to systematically evaluate the problem. The following are five commonly used factors, or measures of effectiveness, selected to evaluate traffic problems in residential areas and are discussed below:

Network Considerations

The function and use of a street must be identified before appropriate control measures can be effective. The control measure adopted must be based on its effect on the overall street network, adjacent intersections and streets, and upon local demands of the intersection.

Traffic Volume

A study conducted by the Federal Highway Administration indicates that perceived traffic problems in residential areas varies directly with traffic volumes and that heavy traffic negatively affects the residents' perception of the street and neighborhood. It will be important to have recent information on traffic volumes of the neighborhood to use as an aide in distinguishing between real and perceived traffic problems and in the selection of effective traffic control measures.

Accident History

A knowledge of the types and circumstances of accidents occurring is important in the selection of control measures. The number and type of accidents can be readily used to evaluate an existing situation.

Sight Distance

The relative risk of a right angle collision at an intersection is based primarily on the ability of approaching vehicles on a collision course to take evasive action. The capability of taking this evasive action is a function of available intersection sight distance, approach speed, pavement condition and approach grade.

Speed Patterns

Studies have shown that increases in speed can reduce neighborhood quality and property values. Vehicle approach speed is an important means of assessing what controls are appropriate. Excessive speed can be reduced and more effectively controlled if traffic control measures are appropriately installed.

appendix B

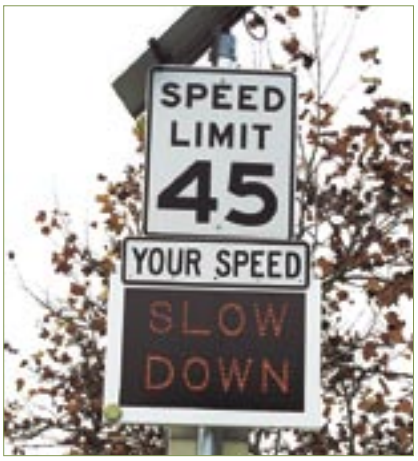
TRAFFIC MANAGEMENT PROGRAM TOOLS

TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 1 • *Education/Awareness/Enforcement*

Category	Tool	Description
1.1	*Education/Awareness/ Enforcement* **Keep Kids Alive – Drive 25 Sign Program**	The Keep Kids Alive – Drive 25 sign program was introduced into the Town as part of the Neighborhood Traffic Management Program in 1999. The signs are not recognized as an official traffic sign, but serve as an awareness device to drivers. The signs are used on residential and collector streets where the posted speed limit is 25 mph. The signs are a reminder to drivers that they need to respect the environment when traveling through residential areas.
1.2	*Education/Awareness/ Enforcement* **Radar Speed Display Sign Program**	Radar display signs are used in conjunction with regulatory speed limit signs to aid in reinforcing the speed limit. The signs can be displayed on a mobile trailer unit or permanently mounted on a fixed pole within a neighborhood. These devices work well for neighborhoods where other traffic calming measures may not be appropriate. **Types** •Trailers (temporary) •Mounted (permanent)
1.3	*Education/Awareness/ Enforcement* **Police Enforcement**	Police enforcement uses the presence of police within neighborhoods to monitor speeds and issue citations for speeding and stop sign violations. This activity is best suited for neighborhoods with documented accounts of traffic violation problems and in of need of immediate mitigation measures. Areas with higher traffic volumes or repeated patterns of violations are more readily and successfully enforced.

appendix B

Advantages	Disadvantages	Cost	
• May reduce vehicle speeds • May heighten driver awareness	• Signs are not enforceable • Signs become part of the landscape background over time • Overuse of the sign can decrease it's effectiveness and contribute to sign blight	• Low	
• Reduces vehicle speeds • Reinforces the speed limit • Effective on both high and low volume streets	• May be considered visually unattractive • Signs could lose effectiveness to drivers with overuse • High costs for permanent signs • Use of mobile trailer unit requires daily staffing • Should not be used in rural areas where units may be susceptible to vandalism	• Moderate to High	
• Targeted enforcement effective during problematic hours • Immediate results when police are present	• Temporary measure • Enforcement is limited to police availability	• Moderate – staff time	

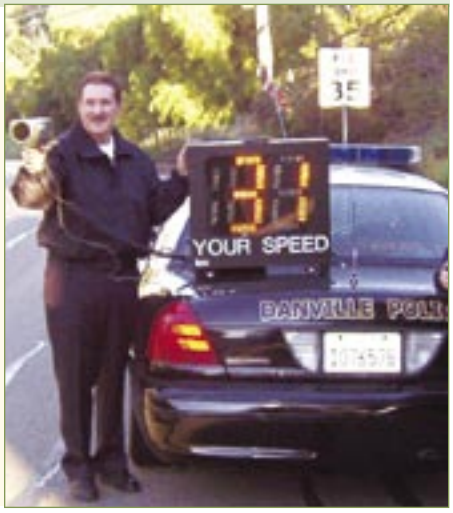
TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 1 • *Education/Awareness/Enforcement*

Category	Tool	Description
1.4	*Education/Awareness/Enforcement* **Community Speed Watch Program**	The "Volunteers in Police" program helps police to encourage traffic safety in neighborhoods. The goal of the program is to work in cooperation with the community in promoting voluntary compliance with existing speed limits by issuing courtesy letters to drivers observed speeding in residential areas. The observations are made by certified volunteers who send a letter to the driver on behalf of the Town Police Department.
1.5	*Education/Awareness/Enforcement* **Street Smarts Program**	Local agencies in the San Ramon Valley area recently joined forces to launch a regional public education campaign on traffic safety called "Street Smarts." The goal of the Street Smarts campaign is to educate drivers, bicyclists and pedestrians on issues related to traffic safety. Components of the Street Smarts campaign materials will be expanded and made available for application in the NTMP.

appendix B

Advantages	Disadvantages	Cost
• May reduce vehicle speeds • May heighten driver awareness • Requires limited staff time	• Not enforceable by citation • May be considered an invasion of privacy • Requires set amount of time to gain certification • Availability based on volunteers' willingness to participate	• Moderate – staff time coordinating volunteer efforts



• May reduce vehicle speeds • May heighten driver awareness	• Not enforceable by citation • Requires time for brand recognition and awareness	• Moderate to High – staff time, marketing and materials development

TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 2 • *Traffic Control*

Category	Tool	Description
2.1	*Traffic Control* **Speed Limit Signs**	Speed limit signs are regulatory devices used to inform motorists of a maximum speed limit imposed and enforced by the governing agency. Multiple postings of speed limits can be effective if placed appropriately within neighborhoods.
2.2	*Traffic Control* **Stop Signs**	Stop signs are used to assign right of way at intersections. They are one of the most effective traffic control devices when used appropriately. However, when stop signs are used too frequently or at locations where assigning vehicle or pedestrian right-of-way is not necessary, the signs can lose their effectiveness and the respect of drivers. The use of stop signs is also not intended for regulating the control of vehicle speeds. Stop sign installations must meet a specified set of criteria (referred to as "warrants").
2.3	*Traffic Control* **Pavement Markings**	Pavement markings inform drivers of roadway use in the form of centerlines, bike lanes, shoulder stripes, and legends. The use of centerlines and shoulder stripes on residential streets creates a narrowing effect which can result in reduced vehicle speeds. The use of pavement markings in residential areas must be appropriate for the conditions of the street and comply with standard traffic engineering practices. **Types** • Raised centerline markers (bott dots and reflectors) • Shoulder stripe or bike lane • High visibility crosswalks • Curb markings

appendix B

Advantages	Disadvantages	Cost	
• Displays definition of the legal speed limit • Provides enforcement justification	• Overuse of signs can contribute to sign blight and loss of effectiveness to drivers over time • Signs do not ensure responsible driving behaviors • On-going maintenance costs	• Low	
• Assigns right of way at intersections • Increases opportunity for pedestrian crossings • Possibly reduces cut-through traffic	• Can increase traffic noise and pollution • May create a false sense of security to pedestrians • May redistribute location of speeding • Unwarranted or numerous stop signs may increase stop violations • Added Police enforcement responsibilities	• Low	
• Re-enforces lane designations, particularly on curves • Narrowing effect of street may result in reduced speeds • Provides reflectivity for improved night visibility • Curb markings (No Parking Zones) increase visibility at the corners of intersections for drivers and pedestrians	• May be considered aesthetically displeasing in some neighborhoods • May limit on-street parking • Routine maintenance costs	• Low	

TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 3 • *Traffic Calming Devices*

Category	Tool	Description
3.1	*Traffic Calming Devices* **Speed Undulations**	Speed Undulations, otherwise known as speed bumps or humps, are raised sections of the roadway that are designed to slow down the speed of traffic. There are several types of undulations that can be used depending on the characteristics of a street. The basic dimensions of these devices range from 3 to 3 1/2 inches in height by 10 to 12 feet in width. Undulations are typically installed on low volume residential streets only, where the posted speed limit is 25 MPH. All undulations require the installation of supplementary warning signs at the entry points of the street. **Types** • Speed Humps (asphalt) • Speed Lumps (asphalt–wheel ruts cut in the center for emergency vehicles) • Speed Cushions (rubber composite modules)

Speed Lump

appendix B

Advantages	Disadvantages	Cost
• Reduces vehicle speeds • May reduce traffic volumes • Self-enforcing • Maintenance free	• Possible increase in traffic noise • Possible increase in emergency response times • May be considered visually unattractive • Potentially diverts traffic to other neighborhoods	• Moderate for speed humps and speed lumps • High for speed cushions

Speed Hump

Speed Cushion

TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 3 • *Traffic Calming Devices*

Category	Tool	Description
3.2	*Traffic Calming Devices* **Traffic Circles**	Traffic Circles are raised medians placed in the center of an intersection. The purpose of traffic circles is to slow and direct traffic through an intersection. Traffic circles are often seen with landscaping in the center of the island. Stop signs are usually used in conjunction with traffic circles, although larger traffic circles on streets with higher traffic volumes may only have yield signs and no stop restrictions.
3.3	*Traffic Calming Devices* **Raised Crosswalks**	Raised crosswalks are flat-topped speed humps built to function as a pedestrian crossing. The crosswalks are usually constructed using brick pavers or special paving textures, but marked in the same manner as conventional crosswalks. Raised crosswalks are appropriate in active pedestrian areas such as trail crossings and shopping centers.
3.4	*Traffic Calming Devices* **Median/Entry Islands**	Median Islands are raised areas in the center of the roadway that separate opposing lanes of traffic. Entry Islands are used to channel vehicles and designate roadway use at intersections leading to residential areas. Median and Entry Islands narrow the roadway which can reduce vehicle speeds.

appendix B

Advantages	Disadvantages	Cost	
• Reduces vehicle speeds • Vehicle noise is minimal • Creates a visual break on long, straight streets • Can add to the aesthetics of a neighborhood if landscaped	• Cost • Can increase bicycle and pedestrian conflicts with autos • May slightly affect emergency response times • Requires routine maintenance and irrigation if landscaped • Posted signage is required to facilitate traffic flow	• High	
• Increases the visibility of pedestrians • Reduces vehicle speeds • Minimal effect on emergency response times • Specially textured crosswalks can provide excellent aesthetic values	• Possible increase in traffic noise • May affect drainage • Requires supplemental signage and striping • May increase emergency response times • Significant costs	• Moderate to High	
• Narrow travel lanes can reduce vehicle speeds • Increases traffic safety by designating proper lane usage	• May result in the removal of on-street parking • May interrupt driveway access and create “U-turn” activity • Landscaped medians require maintenance and are not possible in many areas	• Moderate to High	

TRAFFIC MANAGEMENT PROGRAM TOOLS

CATEGORY 3 • *Traffic Calming Devices*

Category	Tool	Description
3.5	*Traffic Calming Devices* **Curb Extensions**	Curb extensions narrow the street at intersections (bulb-outs) or midblock locations (chokers) by widening the sidewalk or landscaped area in order to reduce the width of the roadway. Curb extensions may provide additional space for landscaping as long as driver visibility and sight distances are not compromised. **Types** •Bulb-outs (at intersections) •Chokers (at mid-block locations)
3.6	*Traffic Calming Devices* **Speed Tables**	Speed Tables are raised sections of the roadway that serve as a slow point for vehicles. Speed Tables are similar to speed humps, only they are longer with a flat top, creating a comparatively milder feel to drivers. The device may be suitable for heavier volume streets where standard speed undulations would be inappropriate. Speed tables can be constructed using brick or other textured materials.
3.7	*Traffic Calming Devices* **Other Measures and Devices**	There are additional traffic calming measures and devices that can have significant impacts on neighborhood traffic conditions. However, the magnitude of these measures can be both controversial and very costly. Neighborhoods that pursue these traffic calming measures must have significant and apparent traffic safety concerns where milder devices would not be appropriate or effective. Extensive traffic studies are required and certain criteria must be met in order for a neighborhood to qualify for such devices. **Types** •One way streets •Semi-diverters (partial street closure) •Full diverters (full street closure) •Diagonal diverters

appendix B

Advantages	Disadvantages	Cost
• Reduces vehicle speeds • May reduce traffic volumes • Bulb-Outs reduce pedestrian crossing distances • May add visual enhancements to the neighborhood	• Reduces on-street parking spaces • Reduces travel way for bicyclists • Added maintenance costs for landscaped areas	• Moderate to High
• Reduces vehicle speeds • Minimal effect on emergency response times • Adaptable to streets with higher traffic volumes • Can be used at intersections • May function as a crosswalk, increasing pedestrian visibility	• Possible increase in traffic noise • May affect drainage • May be considered visually unattractive • Requires supplemental signage and striping • Possible loss of on-street parking	• Moderate to High
• Limits or diverts cut-through traffic • May reduce vehicle speeds • Landscaped areas may add visual enhancements to the neighborhood	• May reduce on-street parking • Limits neighborhood accessibility • Added maintenance costs for landscaped areas • Diverts traffic to other neighborhoods and streets, potentially creating a new set of problems for other areas of the town	• High

appendix C

ENGINEERING CONSIDERATIONS

Traffic Volume

The function and use of a street is an important consideration in assessing the use of traffic calming devices. In general, streets that function as, or are classified in the General Plan as, an "arterial" or a "collector" roadway (streets that typically carry in excess of 1,500 vehicles per day) are not appropriate candidates "vertical deflection devices" (e.g., any variation of a speed undulation, speed table, raised intersection, etc.). There are exceptions to this rule, and they apply on streets that are intended to serve a predominantly pedestrian area or are flanked on both sides by public facilities and/or school related facilities that experience high pedestrian traffic.

Diverted Traffic

Sometimes, successfully calming traffic on one street may result in the diversion of traffic onto an adjacent street. The following guidelines are followed in establishing impact limitation on non-project local streets:

1. An increase of more than 150 vehicles per day as a result of an NTMP project is not acceptable on any local street regardless of its prior volume.
2. An increase of more than 400 vehicles per day as a result of an NTMP project is not acceptable on any major street.
3. The resulting traffic volume on any local street should not exceed 1,500 vehicles per day.

The Town has established these guidelines for the following reasons:

- Residents of adjacent non-project local streets are provided with some assurance that traffic problems on one local street will not be solved simply by shifting the problem to other local streets.
- The guidelines can be translated to a table where the impact limit on any given street can be quickly and easily identified.
- The guidelines provide a quantifiable and objective standard for measuring the success or failure of a project.

An increase in traffic volume that exceeds the impact guidelines is not necessarily fatal for a project. Other, more qualitative, criteria should also be used to help determine whether a project's secondary or unintended impacts are acceptable.

appendix D

SPECIAL CIRCUMSTANCE NEIGHBORHOOD PETITION BOUNDARY

The definition of a neighborhood boundary can be controversial in the NTMP process. Often, the way a boundary area is defined can have a profound effect on the outcome of a neighborhood's pursuit for traffic calming measures because it defines the area that the petition must be circulated. In general, all residents who could potentially be affected by the installation of traffic calming devices are included in both the notification as well as the petition boundary. In most cases, particularly within the planned developments east of I-680, this process is relatively simple.

However, there are areas – typically along the west side of I-680 - where neighborhood boundaries are not simple to define. Furthermore, these residential areas are typically affected by traffic conditions from sources outside of their immediate neighborhood. For these unique cases, the Transportation staff will use a "special circumstance" provision to limit, or reduce, the boundary area to include only the neighborhood immediately affected by the traffic safety issues. A neighborhood would qualify for the "special circumstance" boundary provision if the:

a. 85th percentile speed exceeds 25 mph; and

b. Neighborhood serves as a primary access point for outlying areas (thereby incurring speeding and/or heavy traffic volumes generated primarily by the outlying areas); and

c. Neighborhood roadway network experiences one or more of the following issues:

- Traffic volumes that exceed the "environmental capacity" of the residential (non- collector) roadway, where the threshold is generally 1,200 vehicles per day
- Lack of sidewalks and unimproved shoulders
- Narrow street widths
- Roadway visibility concerns (such as sight distance or alignment issues)
- Close proximity to a school or public facility that attracts an increased amount of pedestrian/bicycle activity

This "special circumstance" provision would affect the number of residents who are able to participate in the petition process, not the public hearing notification area. The Town would continue to notify the greater neighborhood area regarding any proposed implementation of traffic calming solutions.

Summary of Traffic Management Tools

TRAFFIC MANAGEMENT TOOLS	Speed Reduction	Volume Reduction	Access Restrictions
EDUCATION, AWARENESS, ENFORCEMENT			
Keep Kids Alive-Drive 25 Signs	◐	○	○
Radar Display Signs/Trailers	●	○	○
Police Enforcement	●	◐	○
Community Speed Watch Program	◐	○	○
"Street Smarts" Campaign	N/A	○	○
TRAFFIC CONTROL DEVICES			
STOP Signs	◐	○	○
Speed Limit Signs	◐	○	○
Pavement Markings	◐	○	○
TRAFFIC CALMING DEVICES			
Pavement Undulations	●	●	○
Traffic Circles	●	◐	○
Raised Crosswalks	●	◐	○
Entry/Median Islands	◐	○	○
Curb Extensions	◐	◐	◐
Speed Tables	●	◐	○
Semi-Diverters	●	●	●
Diagonal Diverters	●	●	●
One Way Streets	◐	●	●
Full Closures	●	●	●

appendix E

	Emergency Impacts	Noise Pollution	Loss of Parking	Maintenance /Staff Hours
	○	○	○	●
	○	○	○	●
	○	○	○	●
	○	○	○	●
	○	○	○	●
	●	●	○	●
	○	○	○	●
	○	○	●	●
	● ●	●	●	●
	●	○	●	●
	● ●	●	●	●
	●	○	●	●
	○	○	●	●
	●	●	●	●
	●	○	●	●
	●	○	○	●
	●	○	●	●
	●	●	●	●

KEY

No Impact ○

Low Impact ●

Moderate Impact ●

High Impact ●

appendix F

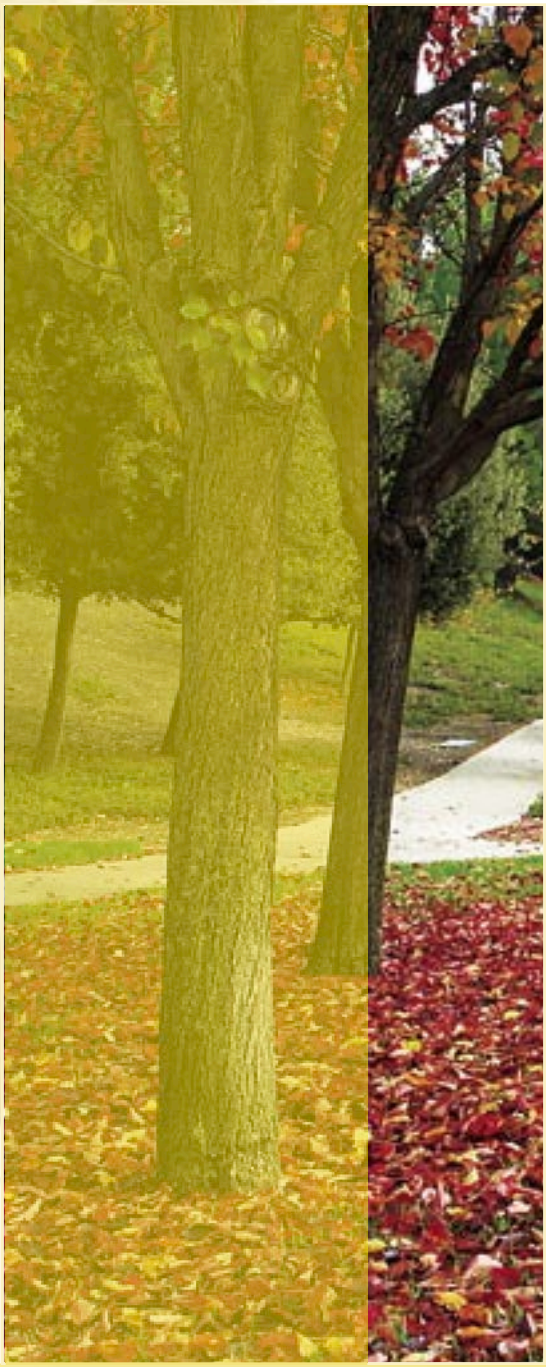
PROJECT RANKING GUIDELINES

Often, there is a high demand for the application of the NTMP program and its funding throughout the Town. In general, the Town takes a first-come-first-served (based on date of NTMP application submittal) approach in ranking the priority of projects. However, the Town will consider the following additional factors when ranking the priority of NTMP application requests:

1. **Traffic Volumes**
   The average daily traffic volume (ADT) of the subject street(s) will be considered as a factor in ranking the priority of a project area.
2. **Speed**
   A survey of the average driving speed within the project area will be taken. The percentage above the speed limit will be considered as a factor in ranking the priority of a project area.
3. **Accidents**
   The accident history of a project area will be considered as a factor in ranking the priority of a project area.
4. **Schools and Pedestrian Areas**
   The project area's proximity to schools and other pedestrian-oriented areas (e.g., parks, etc.) will be considered as a factor in ranking the priority of a project area.

Glossary of Terms

85th Percentile Speed	Prevailing speed of vehicles traveling on a roadway
ADT	Average Daily Traffic
CEQA	California Environmental Quality Act
Choker	Narrowing of the street at intersections or at mid-block to reduce the width of the roadway
Cul-de-sac	Complete closure of the street, either at intersections or at mid-block, to completely block access from one end of a street while allowing adequate turnaround
Curb Extension	This is another term for a "choker," which is a narrowing of the street
Diagonal Diverter	Barrier placed diagonally across an intersection to convert the intersection into two unconnected streets to break up through routes
Horizontal deflection device	General term for any measure that alters the horizontal alignment of the roadway over a short distance (such as curb extensions, chokers, etc.)
Channelizations	Used to limit directional traffic movements
mph	Miles per hour
MUTCD	Manual on Uniform Traffic Control Devices
NTMP	Neighborhood Traffic Management Program
Pavement Undulation	Raised pavement areas across a roadway that generally has a height of 3 to 4 inches with a travel length of 12 feet. There are a number of variations with common names, including "speed humps," speed lumps," and "speed cushions"
Raised Medians	Also called "intersection channelizations." Used to limit directional traffic movements
Roundabout	Similar to traffic circles but have splitter islands that prevent vehicles from turning in front of the circle
Rumble Strips	Patterned sections of raised or grooved pavement, used as a means of attracting the driver's attention
Semi-Diverters	Partial street closures which limit access to a street from one direction by blocking half the street
Speed Bump	A raised pavement area across a roadway that generally has a height of 3 to 6 inches with a travel length of 1 to 3 feet (typically used in parking lots)
Speed Cushion	A variation of a speed hump, constructed of rubber composite modules, and arranged to accommodate the wheel base of emergency response vehicles
Speed Hump	Also called "pavement undulations." They are raised pavement areas across a roadway and generally has a height of 3 to 4 inches with a travel length of 12 feet
Speed Lump	A variation of a speed hump, constructed of asphalt, which incorporates grooved channels to accommodate the wheel base of emergency response vehicles
Traffic Circle	Typically round raised islands placed at the center of an intersection. They are typically effective tools as intersection calming devices.
Vertical Deflection Device	General term for any measure that alters the vertical profile of the roadway over a short distance (such as speed humps, speed lumps, speed cushions, raised crosswalks, etc.)
vpd	Vehicles per day



Town of Danville
transportation
services division

925.314.3340
510 la gonda way
danville, ca 94526
www.ci.danville.ca.us